

WHAT IS CLAIMED IS:

1. A light-emitting device comprising:

a pair of electrodes formed on a substrate; and

5 organic compound layers provided in between the electrodes,

wherein the organic compound layers comprises a light-emitting layer comprising a hole-transporting material and a phosphorescent compound and an electron-transporting
10 layer comprising an electron-transporting material, and an ionization potential of the electron-transporting material is 5.9 eV or more.

2. The light-emitting device according to claim 1,

15 wherein a minimum excitation triplet energy level of the electron-transporting material is from 60 kcal/mol to 90 kcal/mol.

3. The light-emitting device according to claim 1,

20 wherein an electron mobility of the electron-transporting material is $1 \times 10^{-4} \text{ cm}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$ or more in an electric field of $1 \times 10^5 \text{ V} \cdot \text{cm}^{-1}$.

4. The light-emitting device according to claim 1,

25 wherein the electron-transporting material is an aromatic

heterocyclic compound comprising a hetero atom.

5. The light-emitting device according to claim 1,
wherein the electron-transporting material is an aromatic
5 heterocyclic compound which has an azole skelton.

6. The light-emitting device according to claim 1,
wherein the electron-transporting material is at least one of
an aromatic heterocyclic compound which has a condensed azole
10 skelton and an aromatic heterocyclic compound which has a
triazine skelton.

7. The light-emitting device according to claim 1,
wherein the electron-transporting material is an aromatic
15 heterocyclic compound which has an condensed imidazopyridine.

8. The light-emitting device according to claim 1,
wherein the content of the electron-transporting material is
from 20 to 100% by weight based on the total content of the
20 electron-transporting layer.

9. The light-emitting device according to claim 1,
wherein at least one of the organic compound layers is formed
by a coating method.

10. The light-emitting device according to claim 1,
wherein the phosphorescent compound comprises one of
orthometallated metal complex and porphyrin metal complex.

5 11. The light-emitting device according to claim 10,
wherein the orthometallated metal complex comprises one of
rhodium, platinum, gold, iridium, ruthenium and palladium.

10 12. The light-emitting device according to claim 1,
wherein the content of the phosphorescent compound is from 0.1
to 70% by weight based on the total content of the light-emitting
layer.

15 13. A light-emitting device comprising:
a pair of electrodes formed on a substrate; and
organic compound layers provided in between the
electrodes,

wherein the organic compound layers comprises a
hole-transporting layer comprising a hole-transporting
20 material, a light-emitting layer comprising a phosphorescent
compound and an electron-transporting layer comprising an
electron-transporting material, and an ionization potential
of the electron-transporting material is 5.9 eV or more.

14. The light-emitting device according to claim 13,
wherein a minimum excitation triplet energy level of the
electron-transporting material is from 60 kcal/mol to 90
kcal/mol.

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15. The light-emitting device according to claim 13,
wherein an electron mobility of the electron-transporting
material is $1 \times 10^{-4} \text{ cm}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$ or more in an electric field
of $1 \times 10^5 \text{ V} \cdot \text{cm}^{-1}$.

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16. The light-emitting device according to claim 13,
wherein the electron-transporting material is an aromatic
heterocyclic compound comprising a hetero atom.

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17. The light-emitting device according to claim 13,
wherein the electron-transporting material is an aromatic
heterocyclic compound which has an azole skelton.

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18. The light-emitting device according to claim 13,
wherein the electron-transporting material is at least one of
an aromatic heterocyclic compound which has a condensed azole
skelton and an aromatic heterocyclic compound which has a
triazine skelton.

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19. The light-emitting device according to claim 13,

wherein the electron-transporting material is an aromatic heterocyclic compound which has an condensed imidazopyridine.

20. The light-emitting device according to claim 13,
5 wherein the content of the electron-transporting material is from 20 to 100% by weight based on the total content of the electron-transporting layer.

21. The light-emitting device according to claim 13,
10 wherein at least one of the organic compound layers is formed by a coating method.

22. The light-emitting device according to claim 13,
wherein the phosphorescent compound comprises one of
15 orthometallated metal complex and porphyrin metal complex.

23. The light-emitting device according to claim 22,
wherein the orthometallated metal complex comprises one of rhodium, platinum, gold, iridium, ruthenium and palladium.

24. The light-emitting device according to claim 13,
wherein the content of the phosphorescent compound is from 0.1 to 70% by weight based on the total content of the light-emitting layer.